

ABSTRACT OF THE DISCLOSURE

A method is provided for identifying a cost-minimizing bid set in a reverse combinatorial auction subject to various business rules for all-or-nothing bundled bids. The method includes introducing a decision variable for each bid, introducing a counting variable to indicate whether bids from a supplier are chosen in an optimal bid set, modeling demand constraints for each item using the bid variables, modeling minimum and maximum numbers of suppliers based on the counting variables, introducing dummy variables to ensure existence of feasible solutions, for a given cost formulating an objective of choosing bids that arrive early based on an additional timestamped objective with the given cost level as a constraint, and introducing price modifications to handle the formulated objective of choosing bids that arrive early.